REMARKS

The Official Action has objected to dependent Claim 2 as failing to limit the independent claim from which it depends. Claim 2 has now been cancelled such that this objection is moot. The Official Action also rejected Claims 1, 2, 5 and 6 under the judicially created doctrine of double patenting over Claims 1, 6, 8 and 10 of U.S. Patent No. 6,687,440. A terminal disclaimer is submitted herewith, thereby overcoming this nonstatutory double patenting rejection. Finally, the Official Action has rejected Claims 1-6 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,170,457 to Cheng-Kuei Jen in view of U.S. Patent No. 5,848,215 to Youichi Akasaka et al. As described below, Claims 1-6 are patentably distinct from the cited references, taken either individually or in combination, such that the obviousness rejection is traversed. Applicants therefore respectfully request reconsideration of this application and allowance of Claims 1-6.

As set forth by independent Claim 1, an optical fiber is defined that includes a core and a cladding surrounding the core. The cladding has an index of refraction that is less than the index of refraction of the core. The cladding also has an acoustic wave propagation velocity that is less than the acoustic wave propagation velocity of the core. Thus, the core guides the optical waves through the core, while anti-guiding acoustic waves. The optical fiber of independent Claim 1 also includes "an irregular coating disposed on said cladding that varies in a lengthwise direction in order to alter a mode profile of the acoustic waves." As further defined by independent Claim 1, the "irregular coating is comprised of an acoustically dampening material that is acoustically matched to said cladding."

By being irregular, the coating of the optical fiber of amended independent Claim 1 advantageously serves to alter the mode profile of the acoustic waves so that acoustic waves reflected by the coating do not substantially contribute to the fundamental acoustic mode within the core. As further described by page 8, line 33 – page 9, line 13 of the present application,

> In this regard, the irregular coating can couple the fundamental acoustic mode into higher order acoustic modes which provide little, if any, power for stimulated Brillouin scattering. In addition, the irregular coating can incoherently scatter acoustic energy back into the cladding and the core in order to actually interfere with the fundamental acoustic mode. In this regard, due to the irregularities of the coating, the phase of the acoustic wave reflected at one location along the length of the optical fiber will generally be different than the phase of the acoustic wave reflected at another location along the length of the optical fiber in order to cause at least some interference between the various acoustic modes. As such, the reflected acoustic waves may create a fundamental acoustic mode having a non-planer phase front within the core of the optical fiber, such as a fundamental acoustic mode having side lobes of opposite polarity which substantially reduce the overlap integral between the fundamental optical and acoustic modes within

the core, thereby increasing the threshold at which stimulated Brillouin scattering commences.

Additionally, by forming the irregular coating of an acoustically dampening material that is acoustically matched to said cladding, "acoustic waves that reach the interface between the cladding and the coating will continue to propagate radially or laterally outward into the coating so as to be dampened therein." See page 8, lines 14-16 of the present application.

The Official Action indicates in paragraph 4 that the Jen '457 patent discloses a coating disposed on the cladding (citing column 6, lines 48-51 of the Jen '457 patent), but fails to disclose that the coating is irregular and varies in a lengthwise direction. Applicants concur that the Jen '457 patent does not teach or suggest an optical fiber having a coating that is irregular and varies in the lengthwise direction. In fact, the optical fiber described by the Jen '457 patent is not described to have any type of coating. In this regard, the optical fiber of the Jen '457 patent is only described to have a core and a cladding surrounding the core and does not teach or suggest any type of coating, let alone an irregular coating as recited by independent Claim 1. By way of example, the passage of the Jen '457 patent referenced by the Official Action for its alleged disclosure of a coating layer is actually referring to dopants that may be incorporated in either the core or the cladding and does not mention a coating layer. Moreover, as is apparent from the language of Claim 1 itself, the coating is a separate, distinct layer from the cladding in that the coating is "disposed on said cladding". As such, the cladding described by the Jen '457 patent may not properly be considered to constitute both the cladding and coating layers of the optical fiber of independent Claim 1.

Since the Jen '457 patent does not teach or suggest an optical fiber having an irregular coating and, in fact, does not teach or suggest an optical fiber having any type of coating, the Official Action cites the Akasaka '215 patent for the proposition that an optical fiber may have an irregular coating disposed on the cladding that varies in a lengthwise direction. In this regard, the Official Action points to column 1, lines 55-65 of the Akasaka '215 patent which describes a prior published Japanese application. As described in column 1, lines 55-65 of the Akasaka '215 patent, an optical fiber designed to suppress stimulated Brillouin scattering includes a core doped with germanium oxide and a cladding doped with fluorine in which the density of the fluorine dopant continuously changes in the lengthwise direction so as to vary the refractive index of the core and cladding in the lengthwise direction.

Applicants submit, however, that the description of the published Japanese application provided in column 1, lines 55-65 of the Akasaka '215 patent does not teach or suggest an optical fiber having any type of coating, let alone an irregular coating as recited by independent Claim 1. In attempting to

understand the basis of the rejection, Applicants wonder if the Examiner may be interpreting the statement that "F (fluorine) is doped onto the core and clad" to suggest that a coating of fluorine is formed on the cladding. See column 1, lines 61 and 62. Applicants submit, however, that fluorine, like other dopants, is not deposited on the surface of the core and the cladding, but is, instead, incorporated in the core and cladding. This conventional interpretation is supported by the language of the Akasaka '215 patent itself which indicates that the fluorine causes the refractive index of the care and the cladding to vary along the length of the optical fiber. See, column 1, lines 63-65. In order for the refractive index of the core and the cladding to be effected by the fluorine, the fluorine would have to be incorporated into the core and the cladding and could not merely be deposited on the surface thereof.

Regardless, independent Claim 1 further recites that the "irregular coating is comprised of an acoustically dampening material that is acoustically matched to said cladding." Applicants also submit that neither reference, taken either individually or in combination, teaches or suggests this additional recitation. As described above, neither the Jen '457 patent nor the Akasaka '215 patent describe an optical fiber having a coating. Even considering the fluorine allegedly deposited on the cladding of the optical fiber of the Akasaka '215 patent as a coating, the Akasaka '215 patent does not teach or suggest that the fluorine is "an acoustically dampening material that is acoustically matched to said cladding", as recited by independent Claim 1. Applicants note that the Official Action points to column 6, lines 48-51 of the Jen '457 patent for the proposition that the coating is made of an acoustically dampening material that is matched to the cladding. As described above, however, the Jen '457 patent does not teach or suggest an optical fiber having any type of coating and, instead, the portion of the Jen '457 patent referenced by the Official Action is actually referring to dopants that may be incorporated in either the core or the cladding and does not mention any type of coating layer.

As such, even if the Jen '457 patent and the Akasaka '215 patent were combined, the combination of the references does not teach or suggest an optical fiber having a coating and, in particular, any type of irregular coating comprised of an acoustically dampening material that is acoustically matched to the cladding, as recited by independent Claim 1. As such, Applicants submit that the rejection of independent Claim 1, as well as Claims 3-6 that depend from independent Claim 1 and include all of the recitations of independent Claim 1, is therefore overcome.

CONCLUSION

In view of the cancellation of Claim 2, the submission of a terminal disclaimer and the remarks provided above, it is respectfully submitted that the claims are in condition for immediate allowance. Applicants therefore request reconsideration of the present application to issuance of a Notice of Allowance. In the event that any additional matters arise, however, Applicants suggest that the Examiner contact Applicants' undersigned attorney to expedite the examination of the present application.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefore (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,

Guy R. Gosnell
Registration No. 34,610

Customer No. 00826
ALSTON & BIRD LLP
Bank of America Plaza
101 South Tryon Street, Suite 4000
Charlotte, NC 28280-4000
Tel Charlotte Office (704) 444-1000
Fax Charlotte Office (704) 444-1111

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on July 8, 2004.

Gwen Frickhoeffer

CLT01/4656411v1